What is Claimed is:

1. A nano-structured metal-carbon composite prepared using a nano template.

2. The nano-structured metal-carbon composite according to claim 1, wherein the nano template is selected from silica oxide, alumina oxide or mixtures thereof.

3. The nano-structured metal-carbon composite according to claim 2, wherein the nano template is a silica oxide.

4. The nano-structured metal-carbon composite according to claim 1, wherein a carbon precursor of the metal-carbon composite is selected from the group consisting of furfuryl alcohol, glucose and sucrose.

5. The nano-structured metal-carbon composite according to claim 4, wherein the carbon precursor is sucrose.

6. The nano-structured metal-carbon composite according to one of claims 1 to 5, wherein the metal-carbon composite comprises at least one metal selected from the group consisting of Pt, Ru, Cu, Ni, Mg, Co, W, Fe, Ir, Rh, Ag, Au, Os, Cr, Mo, V, Ta, Zr, Hf, Li, Na, K, Be, Ca, Ba, Mn, Pd, Ti, Zn, Al, Ga, Sn, Pb, Sb, Se, Te, Cs, Rb, Sr, Ce, Pr, Nd, Sm, Re and B.

7. The nano-structured metal-carbon composite according to claim 6, wherein the metal precursor is selected from $(NH_3)_4Pt(NO_3)_2$, $(NH_3)_6RuCl_3$, $CuCl_2$, $Ni(NO_3)_2$, $Mg(NO_3)_2$, $CoCl_2$, $(NH_4)_6W_{12}O_{39}$, $FeCl_3$ or $FeCl_3(NH_4)_3$, $IrCl_6$, $RhCl_3$, AgCl, NH_4AuCl_4, $OsCl_3$, $CrCl_2$, $MoCl_5$, VCl_3, $TaCl_5$, $ZrCl_4$, $HfCl_4$, Li_2CO_3, NaCl, KCl, $Be(CH_3COCHCOCH_3)_2$, $CaCl_2$, $BaCl_2$, $MnCl_2$, $Pd(NO_3)_2$, $TiCl_4$, $ZnCl_2$, $AlCl_3$, Ga_2Cl_4, $SnCl_4$, $PbCl_2$, $SbCl_3$, $SeCl_4$, $TeCl_4$, CsCl, RbCl, $SrCl_2$, $CeCl_3$, $PrCl_3$, $NdCl_3$, $SmCl_3$, $ReCl_3$ and BCl_3.

8. The nano-structured metal-carbon composite according to one of claims 1 to 7, wherein the metal is contained in an amount ranging from 1 to 95wt% and the carbon is contained in an amount ranging from 5 to 99wt%, based on the gross weight of the metal-carbon composite.

9. The nano-structured metal-carbon composite according to claim 8, wherein the metal is contained in an amount ranging from 4 to 36wt% and the carbon is contained in an amount ranging from 64 to 96wt%, based on the gross weight of the metal-carbon composite.

10. The nano-structured metal-carbon composite according to claim 6 or 7, wherein the platinum is contained in an amount ranging from 0.2 to 44wt% and the carbon is contained in an amount ranging from 56 to 99.8wt%, based on the gross weight of the metal-carbon composite.

11. The nano-structured metal-carbon composite according to claim 10, wherein the platinum is contained in an amount ranging from 2 to 34wt% and the carbon is contained in an amount ranging from 66 to 98wt%, based on the gross weight of the metal-carbon composite.

12. A process for preparing a nano-structured metal-carbon composite, comprising:

the preparation step of preparing a nano template;

the calcination step of calcining the prepared nano template;

the impregnation step of impregnating a metal into the calcined nano template using a metal precursor;

the addition and mixing step of adding a carbon precursor in the nano template impregnated with the metal and mixing the carbon precursor uniformly;

the reaction step of reacting the resultant mixture prepared in the addition and mixing step;

the carbonization step of carbonizing the resultant reacted mixture; and

the removal step of removing the nano template from the resultant carbonized mixture.

13. The method according to claim 12, wherein the nano template is selected from silica oxide, alumina oxide or mixtures thereof.

14. The method according to claim 13, wherein the nano template is a silica oxide.

15. The method according to claim 12, wherein the reaction step is performed at a temperature ranging from 100 to 160°C, and the carbonization step is

performed at a temperature ranging from 800 to 1000°C.

16. The method according to one of claims 12 to 15, wherein the carbon precursor is selected from the group consisting of furfuryl alcohol, glucose and sucrose.

17. The method according to claim 16, wherein the carbon precursor is sucrose.

18. The method according to one of claims 12 to 17, wherein the metal-carbon composite comprises at least one metal selected from the group consisting of Pt, Ru, Cu, Ni, Mg, Co, W, Fe, Ir, Rh, Ag, Au, Os, Cr, Mo, V, Ta, Zr, Hf, Li, Na, K, Be, Ca, Ba, Mn, Pd, Ti, Zn, Al, Ga, Sn, Pb, Sb, Se, Te, Cs, Rb, Sr, Ce, Pr, Nd, Sm, Re and B.

19. The method according to claim 18, wherein the metal precursor is selected from $(NH_3)_4Pt(NO_3)_2$, $(NH_3)_6RuCl_3$, $CuCl_2$, $Ni(NO_3)_2$, $Mg(NO_3)_2$, $CoCl_2$, $(NH_4)_6W_{12}O_{39}$, $FeCl_3$ or $FeCl_3(NH_4)_3$, $IrCl_6$, $RhCl_3$, $AgCl$, NH_4AuCl_4, $OsCl_3$, $CrCl_2$, $MoCl_5$, VCl_3, $TaCl_5$, $ZrCl_4$, $HfCl_4$, Li_2CO_3, NaCl, KCl, $Be(CH_3COCHCOCH_3)_2$, $CaCl_2$, $BaCl_2$, $MnCl_2$, $Pd(NO_3)_2$, $TiCl_4$, $ZnCl_2$, $AlCl_3$, Ga_2Cl_4, $SnCl_4$, $PbCl_2$, $SbCl_3$, $SeCl_4$, $TeCl_4$, CsCl, RbCl, $SrCl_2$, $CeCl_3$, $PrCl_3$, $NdCl_3$, $SmCl_3$, $ReCl_3$ and BCl_3.